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09/422,154	10/21/1999	CLOIS E. POWELL	303/1/151	5181

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EXAMINER

WYROZEBSKI LEE, KATARZYNA I

ART UNIT

PAPER NUMBER

1714

DATE MAILED: 04/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/422,154

Examiner

Katarzyna Wyrozbebski Lee

Applicant(s)

POWELL ET AL.

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.138(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-10,12,13,15-20,31-33,35-41,45-59,63-84 and 88-117 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-10,12,13,15-20,31-33,35-41,45,63,88,98-112 and 116 is/are rejected.
- 7) ☒ Claim(s) 46,47,49,53-55,57,67-70,72,74,78-80,82,92-95,97,113-115 and 117 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 23.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

In the light of the newly filed IDS, omitted 112 issues, and new matter removed from the scope of the claims, following non-final office action has been necessitated.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

2. Claims 5, 7-9, 12, 13, 16, 17, 32, 33, 36-38, 48, 49, 52, 56, 58, 63, 64, 66, 73, 77, 81, 83, 89, 98-101, 103, 104, 107, 109-112, 116 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5, line 3 recites "less than about 25 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 25 wt% or about 25 wt%.

Claim 7, line 3 recites "greater than about 60 wt %". With respect to the above limitation, it is not clear if the amount of the diester is greater than 60 wt% or about 60 wt%.

Claim 7, line 4 recites "less than about 20 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 20 wt% or about 20 wt%.

Claim 8, line 3 recites "greater than about 62 wt %". With respect to the above limitation, it is not clear if the amount of the diester is greater than 62 wt% or about 62 wt%.

Claim 8, line 4 recites "less than about 17 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 17 wt% or about 17 wt%.

Claim 9, line 3 recites "greater than about 62 wt %". With respect to the above limitation, it is not clear if the amount of the diester is greater than 62 wt% or about 62 wt%.

Claim 9, line 4 recites "less than about 17 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 17 wt% or about 17 wt%.

Claim 12, line 2 recites "greater than about 55 wt %". With respect to the above limitation, it is not clear if the amount of the diester is greater than 55 wt% or about 55 wt%.

Claim 13, line 4 recites "less than about 25 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 25 wt% or about 25 wt%.

Claim 16, line 3 recites "greater than about 60 wt %". With respect to the above limitation, it is not clear if the amount of the diester is greater than 60 wt% or about 60 wt%.

Claim 16, line 4 recites "less than about 20 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 20 wt% or about 20 wt%.

Claim 17, line 3 recites "greater than about 62 wt %". With respect to the above limitation, it is not clear if the amount of the diester is greater than 62 wt% or about 62 wt%.

Claim 17, line 4 recites "less than about 17 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 17 wt% or about 17 wt%.

Claim 32, line 2 recites "greater than about 55 wt %". With respect to the above limitation, it is not clear if the amount of the diester is greater than 55 wt% or about 55 wt%.

Claim 33, line 3 recites "less than about 25 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 25 wt% or about 25 wt%.

Claim 36, line 3 recites "greater than about 60 wt %". With respect to the above limitation, it is not clear if the amount of the diester is greater than 60 wt% or about 60 wt%.

Claim 36, line 4 recites "less than about 20 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 20 wt% or about 20 wt%.

Claim 37, line 3 recites "greater than about 62 wt %". With respect to the above limitation, it is not clear if the amount of the diester is greater than 62 wt% or about 62 wt%.

Claim 37, line 4 recites "less than about 17 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 17 wt% or about 17 wt%.

Claim 38, line 3 recites "greater than about 62 wt %". With respect to the above limitation, it is not clear if the amount of the diester is greater than 62 wt% or about 62 wt%.

Claim 38, line 4 recites "less than about 17 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 17 wt% or about 17 wt%.

Claim 48, line 3 contains limitation "derived". Term derived is rendered indefinite, since it is not clear as to that exactly is the product obtained by the disclosed process.

Claim 48, line 13 recites "less than about 25 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 25 wt% or about 25 wt%.

Claim 49, line 2 recites "greater than about 0.8°C". With respect to the above limitation, it is not clear if the temperature increase is greater than 0.8°C or about 0.8°C.

Claim 52, line 1 contains limitation "derived". Term derived is rendered indefinite, since it is not clear as to that exactly is the fatty acid claimed.

Claim 56, line 1 recites "less than about 10 wt %". With respect to the above limitation, it is not clear if the amount of the trans isomer is less than 10 wt% or about 10 wt%.

Claim 58, line 12 recites "greater than about 55 wt %". With respect to the above limitation, it is not clear if the amount of the diester is greater than 55 wt% or about 55 wt%.

Claim 58, line 13 recites "less than about 25 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 25 wt% or about 25 wt%.

Claim 63, line 3 recites "at least about 70 wt %". With respect to the above limitation, it is not clear if the amount of the diester is at least 70 wt% or about 70 wt%.

Claim 64, line 3 contains limitation "derived". Term derived is rendered indefinite, since it is not clear as to that exactly what compound is made by the process steps disclosed in claim 64.

Claim 66, line 1 contains limitation "derived". Term derived is rendered indefinite, since it is not clear as to that exactly is the fatty acid claimed.

Claim 73, line 2 contains limitation "derived". Term derived is rendered indefinite, since it is not clear as to that exactly what compound is made by the process steps disclosed in claim 73.

Claim 73, line 12 recites "less than about 25 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 25 wt% or about 25 wt%.

Claim 81, line 1 recites "less than about 10 wt %". With respect to the above limitation, it is not clear if the amount of the trans isomer is less than 10 wt% or about 10 wt%.

Claim 83, line 12 recites "greater than about 55 wt %". With respect to the above limitation, it is not clear if the amount of the diester is greater than 55 wt% or about 55 wt%.

Claim 83, line 13 recites "less than about 25 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 25 wt% or about 25 wt%.

Claim 89, line 2 contains limitation "derived". Term derived is rendered indefinite, since it is not clear as to that exactly what compound is made by the process steps disclosed in claim 89.

Claim 98, line 3 recites "greater than about 60 wt %". With respect to the above limitation, it is not clear if the amount of the diester is greater than 60 wt% or about 60 wt%.

Claim 98, line 4 recites "less than about 20 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 20 wt% or about 20 wt%.

Claim 99, line 3 recites "greater than about 62 wt %". With respect to the above limitation, it is not clear if the amount of the diester is greater than 62 wt% or about 62 wt%.

Claim 99, line 4 recites "less than about 17 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 17 wt% or about 17 wt%.

Claim 100, line 3 recites "greater than about 62 wt %". With respect to the above limitation, it is not clear if the amount of the diester is greater than 62 wt% or about 62 wt%.

Claim 100, line 4 recites "less than about 17 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 17 wt% or about 17 wt%.

Claim 101, line 3 recites "less than about 25 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 25 wt% or about 25 wt%.

Claim 103, line 3 recites "greater than about 60 wt %". With respect to the above limitation, it is not clear if the amount of the diester is greater than 60 wt% or about 60 wt%.

Claim 103, line 4 recites "less than about 20 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 20 wt% or about 20 wt%.

Claim 104, line 3 recites "greater than about 62 wt %". With respect to the above limitation, it is not clear if the amount of the diester is greater than 62 wt% or about 62 wt%.

Claim 104, line 4 recites "less than about 17 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 17 wt% or about 17 wt%.

Claim 107, line 3 recites "less than about 25 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 25 wt% or about 25 wt%.

Claim 109, line 3 recites "greater than about 60 wt %". With respect to the above limitation, it is not clear if the amount of the diester is greater than 60 wt% or about 60 wt%.

Claim 109, line 4 recites "less than about 20 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 20 wt% or about 20 wt%.

Claim 110, line 3 recites "greater than about 62 wt %". With respect to the above limitation, it is not clear if the amount of the diester is greater than 62 wt% or about 62 wt%.

Claim 110, line 4 recites "less than about 17 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 17 wt% or about 17 wt%.

Claim 111, line 3 recites "greater than about 62 wt %". With respect to the above limitation, it is not clear if the amount of the diester is greater than 62 wt% or about 62 wt%.

Claim 111, line 4 recites "less than about 17 wt %". With respect to the above limitation, it is not clear if the amount of the triester is less than 17 wt% or about 17 wt%.

Claim 112, line 3 recites "less than about 20 wt %". With respect to the above limitation, it is not clear if the amount of the fatty acid trans isomer is less than 20 wt% or about 20 wt%.

Claim 116, line 3 recites "less than about 20 wt %". With respect to the above limitation, it is not clear if the amount of the fatty acid trans isomer is less than 20 wt% or about 20 wt%.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 73, 75-77, 84, 89-91 are rejected under 35 U.S.C. 102(b) as being anticipated by Gonzalez (WO 97/30950).

The example 2 (page 12) of the prior art of Gonzalez discloses intercalation process of smectite clay with diester quaternary ammonium compound.

Dimethyl dihydrogenated tallow ammonium chloride solution was added to aqueous slurry of montmorillonite clay, heated at a pH of 8.8-8.6, temperature of 140°C and reacted for about 45 minutes. Montmorillonite clay intercalated with dimethyl dihydrogenated tallow ammonium compound was obtained.

Intercalated clay (Abstract) is utilized in the thermoplastic compositions, in particular polystyrene (page 7, line 27-28).

5. Claims 73, 75-77, 84, 89-91 are rejected under 35 U.S.C. 102(b) as being anticipated by Mardis (EP 798,267).

The prior art of Mardis teaches organophilic clay composition intercalated with monoester quaternary ammonium compound.

Clay is smectite clay such as bentonite or hectorite and undergoes cation exchange with the onium compound. Page 5 of the prior art of Mardis further discloses montmorillonite clay on page 4, line 5.

The onium compound is derived from naturally occurring oils selected from coconut, soybean and tallow (see claims 1-5).

The prior art of Mardis teaches using of the intercalated clays with polyester resins and epoxy resins (claim 10).

In the examples, organoclay is obtained by first forming slurry with water. Next ammonium component was added, mixed and allowed to react (page 9, example 1).

In the light of the above disclosure, the prior art of Mardis anticipates claims rejected above.

6. Claims 48, 50-52, 56, 58, 59, 64-66, 71, 73, 75-77, 81, 83, 84, 89-91, 96 are rejected under 35 U.S.C. 102(e) as being anticipated by Ross (US 6,380,295).

The prior art of Ross discloses composition for nanocomposites. Composition comprises clay intercalated with ammonium compound and then exfoliated in polymeric matrix.

Clay component is a smectite type clay (claim 1) where list of the clays is montmorillonite, bentonite, hectorite, saponite, stevensite and beidelite (page 5, lines 35-65).

Organic cation compounds, preferred formulas are listed in col. 7 of the prior art of Ross. These include diester and triester quaternary ammonium compounds.

The ammonium compound of Ross is made by alkylation of tertiary amine (col. 7, lines 60-65), which process is also described as known in the art.

Polymeric components include polyurethanes, polyesters, polyamides, polycarbonates and polyolefins among many (col. 8). Specific examples include copolymers of polyvinyl pyrrolidone (Table 1, col. 10-11), polyethylene oxide, polyvinyl alcohol, polyethylene glycol, polyamide, polystyrene/MA, polydimethyl siloxane, polyacrylamide, polyester, polyesteramide.

In addition, since present claims do not provide lower limit of the ammonium esters in claims 48, 58, 73 nor lower limit of trans isomer in claims 56, 81 the prior art of Ross is applicable against those claims as well.

In the light of the above disclosure, the prior art of Ross anticipates the requirements of claims rejected above.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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10. Claims 1, 4, 5-10, 12, 13, 15-19, 20, 31-33, 35-41, 45, 63, 88, 98-112, 116 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ross (US 6,380,295).

The discussion of the disclosure of the prior art of Ross from paragraph 14 of this office action is incorporated here by reference.

The difference between the present invention and the disclosure of the prior art of Ross is teaching of using more than one ammonium compound.

It is well settled that it is prima facie obvious to combine two ingredients, each of which is targeted by the prior art to be useful for the same purpose. *In re Linder* 457 F.2d 506, 509, 173 USPQ 356, 359 (CCPA 1972).

Therefore, if the prior art of Ross discloses two different ammonium compounds each one of them utilized to intercalate the clay so that the clay can then be mixed with polymer and exfoliated, it would have been obvious to one of ordinary skill in the art to combine the two cations together.

In addition, since the tallow oil is also taught by the prior art of Ross, its iodine value will be overlapping with the value taught by the present invention, since iodine value is a property.

In the light of the above disclosure, it would have been obvious to one having ordinary skill in the art at the time of the instant invention to utilize both ammonium compounds in the composition of Ross in any ratio and thereby obtain the claimed invention, for reasons stated above.

Allowable Subject Matter

11. Claims 46, 47, 49, 53-55, 57, 67-70, 72, 74, 78-80, 82, 92-95, 97, 113-115, 117 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

It is requested that the applicant provide officially a copy of all the pending claims with the response to the amendment.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katarzyna Wyrozebski Lee whose telephone number is (703) 306-5875. The examiner can normally be reached on Mon-Thurs 6:30 AM-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (703) 306-2777. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

KIWL
March 21, 2003

EDWARD J. CAIN
PRIMARY EXAMINER
GROUP 1500
